many curious features. The most prominent of them is that this fine crescent is sometimes observed to extend to a greater angular extent than 180° (Fig. 12), 260° of the limb of the planet having once been recorded. Sometimes, by adopting special precautions, the whole circumference has been observed, the obscured disc being completely surrounded by a pale and thin luminous ring. This, as M. Trouvelot says, is of very rare occurrence, for it has happened that although the greatest precautions have been taken, no trace of the planet could be found.

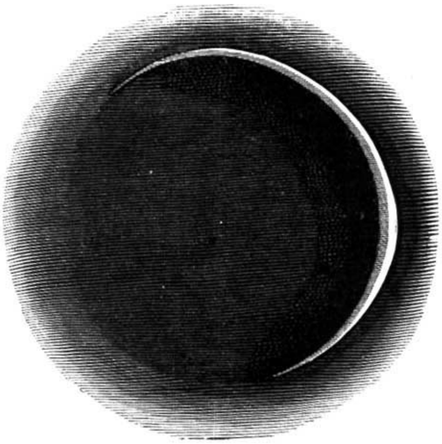

FIG. 13.—Showing the bulging out of the crescent as seen on February 24, 1878.

When the crescent is extremely fine, great irregularities have been noticed to mar the continuity of its curve; they differ also not only at different but at the same conjunctions according as the planet is to the east or west of the sun.

Another fact that has been observed relates to the bulging out of the planet (Figs. 13 and 14) at some parts of its visible limb. This was especially noticed in the month of February, 1878; while the crescent was being looked at, the south-south-east portion seemed to suddenly appear thicker than the remaining part. In fact, the observer in the first instance thought it might have been due to some optical defect in the instrument; but subsequent observation showed that this was not the case, a real change of form having taken place. Two days later this deformation was still more noticeable, the thickness of the visible section being about double what it would have been had it been in its normal condition.

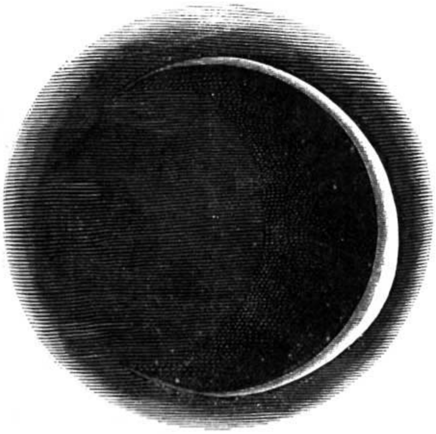

FIG. 14.—The crescent as seen on February 26, 1878.

Perhaps one of the most important points referred to in this work is the determination of the period of rotation by means of the spots. This question of rotation is one that has baffled many observers, for the difficulty that has presented itself lies not only in the proper motions of the spots themselves, but in the identification of the same spots after brief periods of time. Glancing over some of the periods already obtained, we find that Schroeter deduced from his observations a rotation of about 24h., basing his value on the movement of a small isolated spot situated in one of the horns. Fritsch's value of 23h. 22m., and P. de Vico's 23h. 21m. 21s., are both also of about the same length. From observations by D. Cassini and F. Bianchini, we have a very wide deviation, the periods of rotation being reckoned in days, the former arriving at a value of 23 days, and the latter at a somewhat larger one of 24 days 8 hours. Coming now to Schiaparelli's value of 225 days, we have here altogether a new departure, the planet rotating on its axis in the same time as it revolves round the sun.

With such values as these it will be at once seen that there is something radically wrong with the spots or their positions on the planet's surface; in some cases, of course, there might have been instances of mistaken identity, but with such an observer as Schiaparelli, who very definitely settles upon a 225 daily period obtained from direct observation, it is hard to conceive that any such sources of error would not have been remarked.

The observations which we have now before us bear out Schroeter's view of a short rotation, Prof. Trouvelot telling us that they were made during the years 1876–78 under exceptionally good conditions. One very interesting point which is of great importance is the fact that these observations were made at the same period, "souvent dans la même journée, sous un ciel également propice et précisément sur la même point de la planète."

The value nearest to 24 hours that Prof. Trouvelot obtained was 23h. 49m. 28s., and in giving this period he remarks that it is founded on the supposition that the spot had no proper motion. In referring to the period deduced by Schiaparelli he says, "La cause probable de l'erreur de M. Schiaparelli semble résulter de ce fait que les taches *h* et *k*, qui ont servi de base à ses conclusions, faisaient partie de la tache polaire méridionale qui, étant située centralement sur l'axe de rotation de la planète, semble rester stationnaire, comme cela se voit sur la tache polaire de Mars, quand elle se trouve réduite à de faibles dimensions." Taking into account many of the general features visible on the planet's surface, such as the rapid deformations of the horns and of the terminator, all these point to short periods of rotation, which, as Prof. Trouvelot points out, is "inconciliable avec la période de rotation, si lente et si inattendue, déduite par l'éminent astronome de Milan."

In concluding our remarks we cannot help mentioning the very complete way in which Prof. Trouvelot has taken into account the prior work in this interesting field of inquiry.

W. J. L.

NOTES.

THE Iron and Steel Institute will meet at Liverpool from Tuesday, September 20, to Friday, the 23rd. Sir Frederick Abel will preside. The following papers will probably be read and discussed:—(Tuesday) on the condensation of ammonia from blast furnaces, by Sir L. Bell, F.R.S.; on alloys of chrome and iron, by R. A. Hadfield; on the Liverpool overhead railway, by J. H. Greathead: (Wednesday) on the engineering laboratories in Liverpool, by Prof. H. S. Hele-Shaw; on the Siemens-Martin process at Witkowitz, Austria, by P. Kupelwieser; on failures in the necks of chilled rolls, by C. A. Winder: (Thursday) on a new process for the elimination of sulphur, by E. Saniter; on the elimination of sulphur from iron, by J. E. Stead. On Tuesday evening the members and their friends will dine together, and on Wednesday evening there will be a conversazione in the Walker Art Galleries, offered by the Mayor of Liverpool and Mrs. James De Bels Adam. A part of each of the first three days will be devoted to the inspection of various works, and on Friday there will be excursions, one party going to Chester, another to Stoke-on-Trent. If a sufficient number of names are given in, there will also be an excursion to the new Water Supply of Liverpool at Lake Vyrnwy.

THE Sanitary Institute, whose Transactions for 1891 are reviewed elsewhere, is holding its thirteenth annual Congress this week at Portsmouth. About 400 members are attending the meetings. The proceedings began on Monday, when Sir Charles Cameron, the president, delivered an address on "The Victorian Era, the Age of Sanitation." He presented a very interesting sketch of the good results which have sprung from the improved sanitary methods of modern times. The frightful mortality of London and other cities in the last century he described as an evil due to insanitary conditions. By the earlier part of the nineteenth century the grosser defects had been remedied, and the death-rate had been greatly reduced. For about half a century no further improvement took place, but with the passing of the Public Health Acts of 1872 and 1875 an era of active sanitation ensued, with the result that the death-rate fell sensibly in nearly all the towns. Sir Charles urged that the success of past sanitary work ought to encourage us to redouble our exertions to reduce the urban death-rate to at least that of the most healthy of our towns.

THE International Congress of Orientalists finished its scientific labours on Friday last, and every one connected with it agreed that the meetings had been most successful. On Saturday a good many members visited Oxford, while others went to Cambridge. Both parties were cordially received by representatives of the Universities. A meeting held on Monday for the despatch of business brought the proceedings to a close. At this meeting a number of reports and resolutions were read by the secretary, Prof. Rhys Davids. The first resolution proceeded from the Semitic section, and recommended that the Government should be urged to subsidize the study of modern Arabic. The Assyrian and Babylonian sub-section, and also the Egyptian section, passed a resolution in favour of holding at least one combined meeting of the Assyrian and Egyptian sections. The anthropological section expressed its sense of the political as well as the scientific importance of the anthropometric investigations now being conducted in Bengal. The same section also expressed its view of the desirability of forming a collection of Oriental folk-lore on a scientific basis. In the Semitic section a committee had been formed, consisting of men of science from different countries, for the purpose of preparing an Arabic-Mahomedan encyclopædia. At the head of this committee was Prof. Robertson Smith. The Australasian section desired to express its sense of the immediate necessity of pressing forward research into the physical character, languages, arts, customs, and religion of New Guinea. Count Angelo de Gubernatis moved a resolution, which was seconded and carried, in favour of the establishment of an International Institute of Orientalists, with its headquarters in London. It was decided that the next meeting of the Congress should be held at Geneva in 1894—the meeting to be postponed until the following year if circumstances should render such postponement necessary or desirable. On the motion of Prof. Ascoli, seconded by Prof. Drouil, a vote of thanks to the President was cordially passed. In the evening a dinner was given at the Hôtel Métropole by the Organizing Committee to the foreign members.

THE Perthshire Society of Natural Science is one of the most enterprising of British local societies, and we are glad to hear that it is about to give fresh proof of its energy by extending its museum. This includes two excellent collections—the one a general or index collection, intended, by means of carefully-selected specimens, to act as a guide to the study of natural science; the other, a Perthshire collection, intended to give a complete view of the fauna, flora, and geology of the district. These collections have grown so rapidly that there is not now sufficient accommodation for them. It is proposed that the deficiency shall be met by the erection of a supplementary museum hall and gallery, in which the Perthshire collection will be displayed, while the present building will be devoted chiefly to the index collection.

AN improved spherometer, constructed in Zeiss' optical laboratory at Jena after Prof. Abbe's design, is described in this month's *Zeitschrift für Instrumentenkunde*. It is made to measure down to 0·001 mm. To eliminate errors due to the indefinite nature of the base circumscribed by the three legs of the ordinary spherometer, the surface to be measured is laid upon a circular ring, and the contact rod is screwed up from below. This ring has two sharp concentric edges 0·5 mm. apart, the one for convex and the other for concave surfaces, made of hard steel and ground down to the same level, giving a combination which is less liable to be damaged than a single edge. The ring rests without fastening on a perforated horizontal disc provided with a cylindrical projection which just fits into a hollow in the bottom of the ring. The latter is thus free from strain, and can be easily replaced by another of greater or less diameter. The height of the graduated contact rod is read by a micrometer microscope. The first reading is taken when the contact piece touches a plate of plane-polished glass laid over the ring. The plate is then replaced by the surface to be measured, and its radius of curvature calculated by the usual formula.

ON Thursday, the 8th inst., the Cunard Royal Mail twin screw steamer *Campania* was launched from the yard of the Fairfield Engineering and Shipbuilding Company. This is the largest ship afloat, the dimensions being: length, 620 feet; breadth, 65 feet 3 inches; and depth, 43 feet. It exceeds the *City of Paris* or *City of New York* by 60 feet in length and 2 feet 3 inches in breadth. The launch of the *Campania* was an ideal one. Although the launching weight of the ship was 9000 tons, there seemed to be not the slightest hitch. At 2.45 p.m. Lady Burns performed the launching ceremony. The huge ship immediately began to move and slowly travelled down the ways, entering the water amidst the loud cheers of some 80,000 people. The Fairfield Company have every reason to be proud of this feat. Not only was the weight to be launched unprecedented, but, the Clyde at this point being very narrow, the big ship had to be stopped immediately she was afloat owing to her great length. The *Campania* will be driven by two sets of triple expansion engines, each set having five cylinders arranged to drive a three-throw crank shaft, the cranks being set at the angle of 120 degrees from each other; there are two high-pressure cylinders, one intermediate, and two low pressure cylinders, the high-pressure being placed above the low-pressure cylinders. These engines together will indicate about 25,000 horse-power. Steam will be generated by twelve large double-ended boilers with ninety-six furnaces. An auxiliary single-ended boiler is used for supplying the steam for the electric lighting and secondary purposes throughout the ship. The main boilers are arranged in two groups, each group having a funnel 19 feet in diameter. It is expected that the speed attained will reach twenty-two knots on the trial, and it is hoped, when the engines have settled down to their work, that this speed may be attained on the Atlantic.

THE weather has remained very unsettled during the past week, owing to the complex distribution of barometric pressure, there being during the first part of the time low-pressure areas over the northern parts of the kingdom, while an anticyclone lay over France and the Bay of Biscay. These conditions caused a considerable amount of rain, especially in the north and west, although in the southern and eastern parts of the country, the weather was fair, with mist or fog in places. During this period the maximum temperatures rarely exceeded 65° in any part; on Sunday and Monday, however, the anticyclone moved eastwards, and gave place to large depressions from the westwards, rain being general, except in the south-east of England, where the maximum temperatures rose to 70° and upwards, and similarly high readings occurred in the midland and southern districts. On Tuesday a cyclonic disturbance was crossing Scotland, and heavy rain was reported there and in the north-west of Ireland. The Weather Report for the week ending the 10th instant shows that the mean temperature was below the average over the whole of the United Kingdom, and although fairly high day temperatures were registered, the night readings were below 40° generally, and in the east of Scotland they fell to within a degree of the freezing point. The rainfall for the same period was generally less than the normal, and in the south-west of England there was still a deficiency of 8 inches since the beginning of the year.

IN his report on the rain, river, and evaporation observations, made in New South Wales during 1890, Mr. Russell states that the widespread interest in rainfall records is rapidly adding to the number of observers, which now amounts to 1088. The year was conspicuous for abundant rainfall, causing heavy floods in the river Darling, far exceeding those of which there are complete accounts. The average rainfall for the whole colony was 32·73 inches, being 32·6 per cent. greater than the average for the previous sixteen years. The report contains the results of interesting experiments on the effect of forests and elevation on the amount of the fall. At Dinby, which is situated in a densely timbered country, the amount was 35·89 inches, while the mean of nine of the nearest stations gave 38·92 inches. As an instance of the effect of elevation, the average rainfall at Wallongong, half a mile from the sea, at an elevation of 67 feet, is 38·84 inches, while at Cordeaux River, six miles from the sea, it is 55·53 inches.

THE Annual Report of the Acting British Resident of Perak for the year 1891 contains monthly summaries of meteorological observations at nine stations, and a chart showing the comparative range of monthly rainfall during the years 1888-91 at Taiping. The highest recorded temperature in the shade was 97° at Kuala Kangsar and Parit Buntar in the months of March and April respectively; the lowest 62°, in February, at Taiping and Salama. The only solar thermometer, that in Taiping, registered 121° in March and May. The rainfall varied from 85·6 inches at Teluk Anson to 183 inches at Topah. It is well distributed throughout the year, the driest months being May to July.

A MOST unusual phenomenon was seen in the Maltese Islands on July 21, when a thunderstorm raged for twelve hours, and deposited three inches of rain. According to the *Mediterranean Naturalist*, it is fifty-five years since rain fell in Malta in the month of July.

IN the annual report of the British Museum (Natural History) reference is made to two "principal events" relating to the conservation and arrangement of the Zoological collections. The first is the enlargement of the building which contains the collections of specimens preserved in spirits. An enlargement had been rendered necessary mainly by the reception of the *Challenger* collections, which proved to be more extensive than had been anticipated. The addition to the building is already roofed in, and may be ready for occupation within the next twelve months. The other matter of exceptional importance is the arrangement of the collection of birds' eggs. In the old Museum this collection consisted of a small number of specimens of more or less great historical value, and of an imperfect series of deteriorated specimens of the British species, which were exhibited in three table-cases. The first important addition was received in the "Gould" collections, purchased in 1881; other miscellaneous series followed; and, finally, the magnificent donations of Europo-Asiatic species by Messrs. Godman, Salvin, and Seebohm, and of Indian eggs by Mr. A. O. Hume, added so much to the number of specimens, and imparted such a great value to this collection, that its systematic arrangement could be no longer delayed. At the same time the formation of a perfect series of British birds' eggs for exhibition and consultation by the public had become more and more urgent. A requisite grant having been made by the Lords Commissioners of the Treasury, Mr. Seebohm undertook the work of arranging both the general and the British series; and in the course of this year he has made such progress that about 24,000 specimens, belonging to fifteen families, are catalogued and beautifully arranged in thirteen cabinets, and that the British series can probably be opened to the public in the present year.

THE authorities of the French laboratory of physiological psychology have sent a circular to painters, sculptors, and designers, asking them to answer various questions as to their visual memory of colours and forms. Some replies have already been received, and one of the things noted in several of them is that the writers are able, when they see a painting, to perceive at a glance whether the artist has a good visual memory or not.

MR. M. A. DUMONT contributes to the current number of the *Revue Scientifique* an interesting paper on the history of the population in a small rural commune, Saint-Germain-des-Vaux. He has closely examined the communal registers from the early part of the eighteenth century until the present day. It is curious to see how the tendencies not only of the commune, but of its individual families, with regard to the increase or decrease of population, correspond to those of the French nation as a whole.

THE *Kew Bulletin* for September opens with a section on Caraguatá fibres. Samples of the Caraguata plant were obtained through the Foreign Office from Dr. Stewart, British Consul at Asuncion, and submitted to Mr. J. G. Baker, by whom the plant is here described. The number also contains Decas III. of "Decades Kewenses," "New Orchids: Decade 3," and sections on Lagos palm oil and some vanillas of commerce.

WE learn from the *Kew Bulletin* that a handbook of Australian fungi has been prepared by Dr. M. C. Cooke, Mycologist in the Herbarium of the Royal Gardens, Kew, and published under the authority of the several Governments of the Australian Colonies. It contains a full description of all the fungi so far known to occur in Australia and Tasmania, number 2084 species. All the genera are illustrated by 36 plates, 20 of which are coloured.

MR. VICE-CONSUL SCRATCHLEY, of Philippeville, Algeria, has presented to the Museum of the Royal Gardens, Kew, an axe, scraper, and knife, such as are used in the collection of cork in Algeria. The *Kew Bulletin* says that the Museum contains numerous illustrations of the applications of cork, the bark of the cork oak (*Quercus Suber*, L.). The tree grows in Spain, Italy, South of France, and Algeria, and the first crop of cork is taken from the trunk as it stands, at the age of about thirty years, and afterwards at intervals of from six to ten years. The later crops furnish the best bark, which is used for bottle corks and similar purposes.

In his annual report to the Secretary of the Science and Art Department, Dr. V. Ball, Director of the Science and Art Museum, Dublin, says that throughout the past year Major McEniry was continuously engaged in the rearrangement of the Royal Irish Academy collections. Mr. W.F. Wakeman rendered valuable assistance in preparing descriptive lists of the "Crannog finds," and Mr. George Coffey made a catalogue of the Irish coins. Both have been printed, and will serve as valuable records, for future reference, of the present condition and contents of these two branches of the collection. They will, moreover, afford useful material in the preparation of a contemplated handbook to the collection, which now claims attention, but for which some special arrangement will have to be made. In the same report Dr. Ball notes that under the efficient management of Mr. Moore the Royal Botanic Gardens, Glasnevin, maintained during the year their now well-established position as one of the principal centres of scientific horticulture in the United Kingdom. The continued and widespread interest in the operations carried on there is amply shown by the generous support which plant growers still afford by their contributions of novelties.

Mr. E. S. Morse, Director of the Peabody Academy of Science, has been investigating the older forms of terra-cotta roofing tiles, and presents the results of his inquiry in the latest Bulletin of the Essex Institute, Salem. His paper is a valuable contribution to the study of a very interesting subject. The earliest known form of tile consists of two elements—a wide tile (tegula) either square or rectangular, more or less curved in section, and a narrow semi-cylindrical tile (imbrex), usually slightly tapering at one end to fit into the wider opening of the one adjoining. The tegula is placed on the roof, concave face upwards, and the imbrex, placed concave face downwards, covers the lateral joint between two adjacent tegulæ. Tiles of this kind covered the roof of the very ancient temple of Hera at Olympia, the form being identical with that of tiles still used in the remote East. Afterwards the form was modified in Greece and Italy. In one or other of its varieties, this tile—which has been called by Graeber the normal tile—is found all over Asia, in Asia Minor, and in the countries bordering the Mediterranean. The well-known pantile combines the two elements, imbrex and tegula, in one piece. It originated in Belgium or Holland, and is used mainly in those countries, in Scandinavia,, and to some extent in England. The flat tile is simply a shingle in terra-cotta, and has no genetic relation to the other forms of tiles. It is used in Germany, Austria, Poland, Switzerland, France, and England. Mr. Morse's paper is well illustrated, and contains a map showing the geographical distribution of these three types of tile.

Mr. Walter Hough contributes to the report of the U.S. National Museum for 1890, just issued, a very good paper on the methods of fire-making. Having in a previous paper discussed the apparatus of fire-making, he now deals with the handling of the apparatus. All mechanical methods of generating fire take advantage of the law that motion, apparently destroyed by friction, is converted into heat. These methods can be grouped under three classes:—(1) wood friction, (2) percussion of minerals, (3) compression of air. Three other methods exhaust the entire range of usages in fire-making, and, with one exception, they are perhaps recent. These may be arranged in the following classes:—(4) chemical, (5) optical, (6) electrical. These exhibit the action of friction in its highest manifestations. Each method Mr. Hough examines in turn. His exposition is concise and clear, and carefully illustrated.

Several sponge deposits have been discovered at a distance of about 150 metres from the western shore of the island of Pantelleria (depth about thirty metres). Five Greek vessels, with two divers, obtained in three days about twenty-five quintali of sponges of the finest quality.

Two papers which will be included in the forthcoming Macleay Memorial Volume were read at the meeting of the Linnean Society of New South Wales on July 27. One of them, by Prof. F. W. Hutton, is on the Pliocene Mollusca of New Zealand. It gives a complete list of the Mollusca hitherto met with in the Pliocene fossiliferous beds of New Zealand. Such beds have been found only in the southern and eastern parts of the North Island. About 64 per cent. of the Pliocene Mollusca are also found in Miocene rocks, but the Pliocene fauna is well characterized firstly by the presence of the genera *Trophon*, *Columbella*, *Turricula*, and *Mytilicarda*, by the absence of certain genera present in Miocene strata, and thirdly by the small size of sundry species common to both formations. From the recent fauna, that of the Pliocene is distinguished by the presence of from 23–37 per cent. of extinct species, and of a number of genera no representatives of which up to the present time are known to inhabit New Zealand seas. The Pliocene fauna, therefore, seems to be the remains of an earlier fauna disappearing rapidly before the conquering host of the recent fauna, which had invaded New Zealand some time previously. The other paper is by Prof. W. Baldwin Spencer, and offers contributions to our knowledge of Ceratodus, with special reference to the blood-vessels.

At the same meeting of the Linnean Society of New South Wales, Mr. Rainbow exhibited the two sexes of an undescribed Sydney spider (*Nephila* sp.), the webs of which were said to be strong enough to catch male birds.

Mr. A. C. Gatto writes in the *Mediterranean Naturalist* that the pretty moth *Deiopeia pulchella*, Beis, has occurred this year in Malta in unusual abundance. On August 10, when his note was written, and for a fortnight before, it was the commonest moth to be seen on the wing in the island. He does not remember ever to have had occasion to record such extraordinary numbers of any butterfly or moth. This remarkable abundance he supposes to be due to the fact that the rains of the late spring caused an overgrowth of the *Heliotropium europæum*, on which the Deiopeia feeds. The moth is white, with small red and black spots on the forewings, and with white underwings bordered with black. It is subject to much variation, sometimes the black dottings predominating, sometimes the red ones; but it is a very characteristic form and easily distinguished.

A new edition of Mr. Alfred Gibson's well-known "Agricultural Chemistry" has been issued by Messrs. Routledge and Sons. The book was originally issued more than thirty years ago, and there has been a steady demand for it ever since. In preparing the present edition the author has had the help of his nephew, Mr. A. E. Gibson, in making such changes as the advance of agricultural chemistry has rendered necessary.

Messrs. Macmillan and Co. have issued a new edition of Mr. W. H. H. Hudson's "Arithmetic for Schools." The work has been enlarged and very carefully revised.

The University College of North Wales, Bangor, has issued the prospectus of the work to be done by its agricultural department during the session 1892–93. The fund for the promotion of agricultural education amounted, in the session 1891–92, to £1900, and was derived partly from a grant by the Board of

Agriculture, partly from private subscriptions, and partly from grants by the County Councils of Anglesey, Carnarvonshire, and Montgomeryshire. A considerable sum was also contributed locally to meet the expenses of field experiments, dairy demonstrations, and Extension lectures. Two things are aimed at in connection with the College scheme of agricultural education:—(1) To provide at the College as complete a training in agriculture and the sciences related to agriculture as can be obtained at any of the recognized Agricultural Colleges, and especially to provide such a training as would be suitable for land agents, farmers, bailiffs, and young men who intend emigrating with a view to farming in one of the colonies. (2) To make the College a centre of agricultural education for North Wales, and to organize in the six northern counties of the Principality, in connection with the College, a system of instruction to meet the special wants of each agricultural district, and supply a graduated system whereby pupils may pass from the School to the College. Several local landowners and farmers have enabled the College to make arrangements by which farms in the neighbourhood of Bangor can be used by the lecturer in agriculture and the members of his classes for the purpose of practical instruction.

IN a paper on the Ainos of Yezo, contributed to the latest report of the U.S. National Museum, Mr. Romyn Hitchcock refers to the arrow poisons used by the Ainos. The method of preparing these poisons has been revealed to only one traveller, Dr. B. Scheube, who believes his information to be correct, as the accounts obtained from different localities entirely agree. His account is as follows:—The young side roots of *Aconitum Japonicum* are usually gathered in summer and dried in the shade until autumn. The roots which contain active poison become softer, while the others grow harder; apparently a process of fermentation takes place. The former, after the removal of the skin, are rubbed between two stones to a pasty mass. There is no further preparation. This material is either spread directly upon the arrowheads or preserved. The poison maintains its activity for five months. Dr. Scheube adds that in every village the poison is prepared only by a few old men, not because the process of preparation is unknown to the others, but because these men have had experience in its production. Prayers, magic formulas, and the like are not recited during the preparation. The activity of the poison is tested by a portion being placed on the tongue. To ensure its action each arrow receives portions from three different preparations. Dr. Stuart Eldridge has made some chemical and physiological investigations of this poison, which confirm the supposition that aconite is its active ingredient. But Dr. Eldridge declares that the pulp prepared as described is mixed with other ingredients, which he has been unable to identify, but which are probably inert, and the resulting mass is buried for a time in the earth. On removal from the earth the poison, he says, appears as a stiff, dark, reddish-brown paste, through which fragments of woody fibre are distributed; and the poison, when applied to the arrow, is mixed with a certain proportion of animal fat. Mr. Hitchcock secured two specimens of the poison, which are in the form of hard lumps. Specimens of the plant from which the poison is obtained were collected by Mr. T. Holm, and determined by him as *Aconitum Japonicum.* In some parts of the country it grows in great abundance, and the fine purple flowers are very pleasant to the eye.

IN their very interesting account of various plants growing in and through the shells of marine mollusca (noticed by us in NATURE) Bornet and Flahault called attention to some fungoid-like hyphæ, which were recorded under the names of Ostracoblabe and Lithopythium, but in the absence of any fructification or of very definite characters, their position was not more accurately determined. Dr. Bornet, on looking over the fourth part of the Berichte der deutschen botanischen Gesellschaft was struck by the resemblance of *Lithopythium gangliiforme*, B. and F., to the deeper hyphæ of *Verrucaria caliseda* as represented by M. Bachmann in figures 3 and 4 of plate ix. accompanying his memoir (Die Beziehung der Kalkflechten zu ihre Substrat) and it occurred to him that the hyphæ found perforating the marine shells might be those of lichens. To verify such an idea, Dr. Bornet spent some time at Croisic towards the close of the summer of 1891. Here, of the shells gathered at low-water mark or not uncovered at each tide, a large number had the calcareous portions traversed by filaments of *O. implexa.* Sometimes these filaments were solitary, at other times and more frequently they were accompanied by one or more of the perforating Algæ (Gomontia, Ostreobium, Mastigocoleus, Hyella), but nothing either in or externally seemed to indicate that they were the hyphæ of a Lichen. When the shells were gathered off the rocks at a height at which they were frequently out of the water, a large number were found to present discoloured patches covered with dark depressed spots formed by the spermogonia and apothecia of a Verrucaria. The shells of *Purpura lapillus* with the mollusc, or serving as a home for some hermit crab, were the more frequently attacked. Some shells of Patella and Balanus were also attacked. When thin sections were made, perpendicular to the surface of the shell, the outer border appeared granular and was nearly opaque, the hyphæ and the alga condensed in the gonidial layer, having caused the semicrystalline shell structure to disappear, leaving it in a powdery state. But deeper in that portion of the shell which in part preserved its transparency the filaments could be seen perforating it to a considerable extent, and these presented all the characters of those described by Bornet and Flahault as belonging to *O. implexa*, with the sole exception that the fusiform dilatations were not observed. On decalcification the gonidia were found to be mostly supplied by *Mastigocoleus testarum*, some few by *Hyella cæspitosa.* Towards the margin they were reduced to the condition of isolated cells, but deeper down, the long branches of the thallus were found little altered and most easily recognisable, presenting a most favourable example of the connection existing between the gonidial stages of the filamentous algæ. M. l'Abbé Hue recognized the lichen of *Purpura lapillus* as *Verrucaria consequens* (Nyl). It will be noted that the hyphæ of this Verrucaria are capable of living isolated, not except under certain conditions uniting with the algal forms, these latter requiring the presence of the open air from time to time, so that the lichen stage is not developed on the shells always submerged. *Lithopythiuim gangliiforme*, though carefully looked for, was not met with, but its history, when known, will no doubt be equally interesting.

DR. A. B. GRIFFITHS writes to us to explain, in answer to a criticism which appeared in the recent review of his book, "The Physiology of the Invertebrata," that it is extremely difficult to determine in what state of combination uric acid exists in the urine of invertebrates. He, however, considers it more than probable that both potassium and lithium occur in the urine of some of these animals.

THE additions to the Zoological Society's Gardens during the past week include two Philantomba Antelopes (*Cephalophus maxwelli*) from Sierra Leone, presented by Mr. P. Lemberg; two yellow-bellied Liothrix (*Liothrix luteus*) from China, presented by Mr. J. Holmes; four Poë Honey Eaters (*Prosthemadera novæ-zealandiæ*) from New Zealand, presented by Capt. Edgar J. Evans, R.M.S. *Tainui*; a Little Grebe (*Tachybaptes fluviatilis*), British, presented by Mr. Thomas Riley; a Hoopoe (*Upupa epops*), a Greater-spotted Woodpecker (*Dendrocopus major*), twelve Fire-bellied Toads (*Bombinator igneus*), European, purchased.